REMARKS

Claims 11-20 currently appear in this application. The Office Action of July 17, 2007, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Election/Restrictions

The Examiner has made the restriction requirement final.

It is respectfully submitted that the Examiner's statement that the compounds claimed do not define a contribution over the prior art, citing Kraatz, WO 02/06259, also issued as U.S. 6,710,045, is erroneous. What the Examiner has ignored is that the claims are not directed to compounds *per se*, but rather are directed to a method for oxidizing a sulfide group to sulfone or sulfoxide. Thus, it is respectfully submitted that the claims do satisfy the requirement for unity of invention.

Kraatz discloses a process for producing sulfoxides or sulfones from sulfides by treatment with hydrogen peroxide. The present specification, however, has discredited this process, stating that the butenyl double bond is oxidized when

the process is carried out using conventional oixidizing agents. Example 1, column 27 of Kraatz uses hydrogen peroxide to oxidize the sulfur, and produces 40.7% of the theoretical amount of the sulfone and 23.7% of the theoretical amount of the sulfoxide. Example 1 of the present application, which begins on page 13, yields 92% of the theoretical yield. Clearly, the claimed process is different from that disclosed by Kraatz.

The Examiner alleges that compounds having different heterocyclic moieties will have vastly different properties. While that may be the case, applicant is not claiming specific compounds, but a **reaction** that is applicable to heterocyclic fluoroalkenylsulfides, irrespective of the particular heterocycle, such that the sulfur atom can be oxidized without oxidizing the alkenyl double bond.

Claim 11 has been amended to recite "A process for preparing **heterocyclic fluoroalkenyl sulfone and sulfoxide** compounds..." in order to emphasize that the process claimed herein is for preparing heterocyclic fluoroalkenyl sulfone and sulfoxide compounds from heterocyclic fluoroalkenyl sulfides. It is respectfully submitted that all of the claims are directed to the same process, *i.e.*, that of oxidizing the sulfide group in heterocyclic fluoroalkenyl sulfides to produce the corresponding sulfone or sulfoxide compound. The

nature of the heterocyclic group is immaterial, as it is the sulfur moiety that is treated, and not the heterocyclic group.

Claim Objections

Claims 11-20 are objected to for containing elected and non-elected subject matter.

It is respectfully submitted that there should be no requirement of election of a particular heterocyclic group, as the heterocyclic group does not take part in the reaction and therefore is immaterial. As noted above, the claims satisfy the requirement for unity of invention, and it is respectfully requested that the claim objections as well as the restriction requirement be withdrawn.

Art Rejections

Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., WO 0/02378 in view of Patani et al., *Chem. Rev.* 1996, 3147-3176.

This rejection is respectfully traversed. In the Background section of the present application, Watanabe is discussed at page 1, lines 8-15. In Waianabe, oxidation of the sulfide to the sulfone proceeds relatively rapidly, but oxidation of the sulfone to the sulfoxide proceeds only gradually and sluggishly and requires energetic conditions,

such as elevated temperatures and prolonged reaction times, which may reduce the yield of the desired product.

Moreover, contrary to the Examiner's assertion in his claim rejection on page 3, the present specification is not silent as to whether any butane is oxidized. The present specification states at page 1, last paragraph, that the use of customary oxidation process known hitherto using hydrogen peroxide and also optionally formic or acetic acid, optionally in the presence of molybdate or tungstate catalysts, generally led, in particular, to the undesired oxidation of the double bond of the halogenated butenyl radical and to its oxidative degeneration.

In Example 3 of Watanabe, page 17, the sulfoxide is prepared from the sulfone of Example 2 by treating the sulfone with hydrogen peroxide at 55-60°C for six hours. From the differences in reaction conditions, clearly, Watanabe does not disclose or suggest the same process as claimed herein.

In the herein claimed process, such as described in Example 1 on page 13, the oxidation reaction to produce the sulfone is conducted at 5°C for approximately two hours. To produce the sulfoxide, the sulfone is reacted with potassium monopersulfate at 20°C for approximately two hours. The yield is 92% of theory. Watanabe, on the other hand, requires temperatures of 55-60°C for six hours to oxidize the sulfone

to the sulfoxide. The differences in reaction conditions alone should be sufficient to demonstrate that potassium monopersulfate are not the equivalent of the other oxidizing agents disclosed in Watanabe, as the potassium monopersulfate oxidizes the sulfur atom far more quickly and efficiently than hydrogen peroxide, and at milder reaction conditions.

It is not understood why Patani has been cited, because Patani only discusses the steric properties of substituting hydrogen by fluorine. However, the difference in the electronic effects of a fluorine substituent, fluorine being the most electronegative element in the periodic table, is often the basis for the major differences in pharmacological properties of agents where fluorine has been substituted for hydrogen (Patani, page 3149, left column, last full paragraph). From this, one skilled in the art would assume that substituting fluorine for hydrogen would produce compounds with quite different activities. Because of the huge difference in electronic effects of fluorine substitution compared to hydrogen, no skilled artisan would be able to predict the same reaction pathway with the molecule substituted with fluorine as compared to hydrogen. Accordingly, Patani adds nothing to Watanabe.

Double Patenting

Claims 11-20 are rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claim 6 of Watanabe, U.S. Patent 6,734,198 in view of Patani.

This rejection is respectfully traversed. As noted above, the herein claimed process provides an unexpected solution to the problem of the undesirable oxidation of the butenyl double bond during the oxidation reaction of the sulfur in compounds (I) and (II). This solution is not obvious in view of the disclosure of Watanabe in view of Patani because thereof the much shorter reaction time and the mild reaction conditions.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant

By: _____
Anne M. Kornbau
Registration No. 25,884

AMK:srd
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
G:\BN\M\MAKH\straub1\pto\2007-12-17AMD.doc